

What Is Claimed Is:

1. An amplitude limiting apparatus having:

differential signal generating means for generating a differential signal representing a difference between a portion of a subject signal to be limited in amplitude in excess of any limit prescribed for the amplitude of the subject signal and the limit, and

amplitude limiting means for limiting the amplitude of the subject signal by subtracting the generated differential signal from the subject signal.

2. The amplitude limiting apparatus according to Claim 1, further having filtering means for filtering the generated differential signal to pass only a prescribed band content of the differential signal, wherein:

the amplitude limiting means limit the amplitude of the subject signal by subtracting the filtered differential signal from the subject signal.

3. The amplitude limiting apparatus according to Claim 2, wherein

the subject signal is in a digital form, and

each of the differential signal generating means, the amplitude limiting means and the filtering means carry out by digital processing respectively the generation of the differential signal, the amplitude limitation of the subject signal and the filtering of the differential signal.

4. The amplitude limiting apparatus, according to Claim

3, further having mapping means for mapping digital transmission signals to be transmitted in a plurality of symbols, and

IFFT processing means for subjecting the plurality of symbols obtained by the mapping to IFFT processing to generate a multi-carrier synthetic signal in a digital form containing a plurality of subcarrier components, wherein

amplitude limitation is carried out on the generated multi-carrier synthetic signal as the subject signal.

5. The amplitude limiting apparatus according to Claim 4, wherein the filtering means allow the passage of each of one or more of the subcarrier components contained in the multi-carrier synthetic signal with a prescribed output gain.

6. A multi-carrier signal generating apparatus having:

multi-carrier signal generating means for generating a multi-carrier signal in a digital form containing a plurality of subcarrier components, and

amplitude limiting means for limiting an amplitude of the generated multi-carrier signal, wherein

the amplitude limiting means have:

differential signal generating means for generating a differential signal representing a difference between a portion of the generated multi-carrier signal to be limited in amplitude in excess of any limit prescribed for the amplitude of the multi-carrier signal and the limit,

one or more filtering means for filtering the generated differential signal, each of the filtering means taking out one of one or more combinations of a plurality of bands contained

in the multi-carrier signal, the taken-out one differing from that or those taken out by other filtering means, and

limiting means for limiting the level of the multi-carrier signal by subtracting from the generated multi-carrier signal one or more combinations of a plurality of bands taken out of the differential signal.

7. A multi-carrier signal generating apparatus having:

multi-carrier signal generating means for generating a multi-carrier signal in a digital form containing a plurality of subcarrier components, and

a plurality of amplitude limiting means each for limiting an amplitude of the generated multi-carrier signal, wherein

each of the plurality of amplitude limiting means has:

differential signal generating means for generating a differential signal representing a difference between a portion of the generated multi-carrier signal to be limited in amplitude in excess of any limit prescribed for the amplitude of the multi-carrier signal and the limit,

filtering means for filtering the generated differential signal, the filtering means taking out one of one or more combinations of a plurality of bands contained in the multi-carrier signal, the taken-out one differing from that or those taken out by other filtering means, and

limiting means for limiting a level of the multi-carrier signal by subtracting from the generated multi-carrier signal one of the one or more combinations of a plurality of bands taken out of the differential signal,

each limiting the level of the multi-carrier signal entered from the multi-carrier signal generating means or the amplitude limiting means of a preceding stage.

8. The multi-carrier signal generating apparatus, according to Claim 7, wherein each of the filtering means takes out one, differing from that or those taken out by the filtering means of the other amplitude limiting means, of the one or more combinations of a plurality of bands contained in the multi-carrier signal, with the same gain as or a different gain from those of the filtering means of the other amplitude limiting means.

9. The multi-carrier signal generating apparatus, according to Claim 6, wherein each of the filtering means takes out one of the one or more combinations of a plurality of subcarrier component bands contained in the multi-carrier signal.

10. The multi-carrier signal generating apparatus, according to Claim 6, further provided with digital-to-analog converting means for converting the multi-carrier signal whose level is limited into transmission signals in an analog form, and

power amplifying means for amplifying the power of the analog form transmission signals.